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## Legal certainty information in learning objects metadata: an analysis of resources in public repositories

Carlos Díaz <sup>a,\*</sup>, Ricardo-José Rejas <sup>b</sup>, Salvador Sánchez-Alonso <sup>a</sup>

<sup>a</sup>*Computer Engineering Department, University of Alcalá, Polytechnic Building, Ctra. Barcelona, km. 33.6, 28871-Alcalá de Henares, Madrid, Spain,*

<sup>b</sup>*University Camilo José Cela, Madrid, Spain.*

### Abstract

There are numerous metrics centered on the estimation of parameters as the quality and the reuse in learning objects. The present study is centred on the definition of the legal certainty on learning objects, understood as the quantity of legal information contained and extracted from the metadata of this. Taking this as a starting point, we establish a quantitative measurement of legal certainty, as relevant input to study its influence in the theoretical reusability of the learning objects. The article presents the methods and results obtained from an analysis of an important sample of objects brought from the repositories Merlot and eLera, in order to extract which are the legal items that influence decisively on the estimation of the legal certainty of the same ones, and that in the same way, they allow to measure statistically the influence that finally they have on the reutilization of these objects on the part of the user.

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### 1. Introduction

Nowadays it is undeniable that the learning objects have influenced decisively to educational level in all the contexts, managing to create a new referring point or paradigm (Wiley, 2000). Nevertheless, there is an agreement in the fact that they are entities similar to "objects", and therefore capable of being separated into smaller and reusable parts. But this important aspect not only has influence in the multiple

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\* Corresponding author. Tel.: +34 609 956 393.  
E-mail address: [cdp03041@alu.uah.es](mailto:cdp03041@alu.uah.es)

capacity of reutilization of his pieces, but it has important implications that can be studied. One of them answers to an important aspect like the component of legal information that every resource can contribute to, and that is going to allow us to verify how it concerns in the theoretical reuse of the learning objects.

Great part of the university teachers consider the educational materials to be his intellectual property, for what his desire to share contents is limited by the need to retain the recognition and intellectual property (Collis and Strijker, 2004). This makes necessary the presence of minimal legal information that clarifies the legitimate utilization of the same ones.

This intellectual property, when treats about educational materials distributed to the margin of the typical formal means of official publication, that is to say, the great majority of educational materials that are generated and used in universities, is not such a checked aspect not so treated like in case of scientific formal production (Rodríguez Pardo, 2003). Nevertheless, when the resources are published in other technological mass media as can be: forums, blogs, webs, social networks, etc ... the thing is different well, since the technology on which the above mentioned knowledge spreads, implies new situations and needs, between others the presence of a minimal legal information that clarifies the legitimate utilization of the same one on the basis of the desire of his authors, since we must not forget that according to the national and international legislation of the majority of the countries, the authors are at first the owners of the copyright on the documentary materials that they create.

Born of this need, in this investigation it is proposed a new definition for the legal certainty in environments of learning objects, which allows us to measure the quantity of legal information contained in the same ones to thus catalogue the resources on the basis of it, and allow to the user an immediate knowledge of the protection and legal information that contains every object.

Bearing in mind everything previous, the definition of the legal certainty appears in detail in the section 2, where is described how it must be understood. The following section (3) details formally the aspects of design and application of the metrics, as well as the items that are used to establish a final weight of legal fulfillment in each of the resources. In the section 4 are summarized the results of the analysis in both samples: Merlot and eLera, and the same ones are discussed, verifying the correlation, influence and existing implications between the reusability measured a priori by Sanz Rodríguez (2009) and the legal certainty estimated in this investigation. Finally, in the last section of this article there are exposed the conclusions, limitations and possible lines of investigation that can be followed.

## **2. Definition and characterization of the legal certainty**

In a technological environment of spreading, like Internet, the legal rights become diffuse, since for example the relation between the right of distribution and of reproduction becomes closer, and it becomes much more necessary to distinguish, to measure and to clarify these aspects (Carbajo, 2002).

Most of the juridical contemporary systems consider assets of intellectual property any work defined as audio-visual, multimedia or computer software, attributing to his author the copyrights on the same, independently from the way that they are published. Definitions with those who, depending on the complexity of the resource, can match perfectly the learning objects as protection figure of intangible assets.

Aforementioned, is reflected clearly the need and relevancy of obtaining methods to extract and to analyze the metadata information of legal nature that the learning object could contain (copyright or copyright, use of licenses, legal information of contact, allowed functionality, etc ...). And to estimate these aspects, the present investigation proposes a new way of measurement centred on the user who allows characterizing the complex legal component of every resource.

The legal certainty is defined as a law principle that grants a guarantee given to the individual by the State so that his person, his goods and his rights will not be forced or that, if the above mentioned was managing to take place, they will be assured by the society, the protection and reparation of same ones in agreement with the law in force and established (Gambier, 2008). But in an environment of learning objects we must derive the above mentioned concept and understand it as the level of protection and legal knowledge that the object contains and that uses like indicatively of the utilization of the same one on the part of the user, and that as the generic term, it represents the privileges and duties of the author opposite to the utilization of the resource on the part of the user. Definitively, it represents a certain level of legal protection and privileges associated with the author of the object opposite to the utilization of the same one for third parties.

Finally, to be able to quantify the above mentioned term in this investigation, we simplify its characterization to the quantity of legal information contained or extracted from a learning object that allows to know if it is possible to do a legal use of the same one. (without violating terms and copyright). That is to say, without violation of rights or legal infractions. This information, therefore, can concern directly the way in which the user re-uses the contents, restricting it, contributing legal uncertainty, or clarifying all his doubts in the matter.

### **3. Design of the method: metrics in legal certainty**

In this section there are defined all the aspects that allow to estimate the legal certainty through the design and application of an original metrics.

#### *3.1. The Reusability like characteristic of contrast.*

The measured and estimated reusability has been defined as an intrinsic attribute to the object that allows offering a measure a priori of the final capacity of reutilization of the same one. (Sanz Rodríguez, 2009). Sanz exposes that to be able to study the factors that determine it will be of great interest since it will facilitate the search of more reusable objects. Taking this as a starting point, the fundamental aim will be to discover how influences in her (reusability) a new measure centred only on the legal aspects. So as Sanz Rodríguez stops to guess, the above mentioned also can be factors that concern the final reutilization of the resource on the part of the user.

#### *3.2. Characterization of the items of the metrics*

Without entering many details, the metrics that allowed to Sanz Rodríguez to obtain the calculation of the reusability was centered on three dimensions: structural, technological and educational, and in spite of the fact that in someone of them it was possible to extract some metadata of legal nature, the certain thing is that they were insufficient and were dispersed, with what there was impeded the fact of calculating the global repercussion of this so concrete information.

The certain thing is that the information in a learning object appears in numerous occasions little structured, complemented in a fragmented way and with high deficit of integrity (Wiley, 2000), for it there exists the need to extend the above mentioned information with the aim to facilitate the reutilization. (Sanz Rodríguez, 2008). With this present, it is necessary to bear in mind that the legal aspects contained in the educational resources in Internet can be measurable but in accordance with several dimensions (Samuelson and Garrote, 2003).

In affinity with Samuelson and Garrote's ideas, a web resource, and therefore a learning object, has basic information simple to detect but vital and primary, and on the other hand an information deeper that it needs of experimentation to be obtained. For extension, this idea can spread to the field of legal information, so we can speak about the basic properties to juridical level as the first category or dimension with presence of legal items; and experimental, impossible to quantify completely in his metadata, and that answers to the applicability that the object have activated legally. This category is complex since it needs to experience completely the resource to discover the functionalities and his legal included restrictions. Nevertheless also it can be the most influential dimension for the user.

Finally, the third dimension that contemplates the metrics reveals the high technical complexity that the resource can contain, since it centers on analyzing programmed elements that penalize the legal confidence of the user. In this dimension are studied the links that the resource or part of the same one could contain. The items here valued are especially three types of links: links in frames (framing), deep links (deep linking) and incrustrated links (ilinking). For example, one of the possible problems lies in that the links by means of frames, can create confusion at the moment of satisfying the need to reflect author and source (Garrote, 2001), being able to seem that the paternity of the work is refused by his original author. For it, it is important to warn that the presence of these items always penalizes the final valuation of the metrics, since his existence minimizes the legal confidence of the user over of the authorship or paternity of certain elements of the object, increasing his uncertainty at the moment of re-using the elements or connected resources.

It is important to remember that the items 6, 7 and 8 are considered to be present in a certain object not by the fact that should exist costs, not economic restrictions or not allowed functions, but because the resource itself should offer information or should reflect clearly for the user that there are or that there are not. For example, a resource in which do not exist costs of utilization, but it is possible to assure it trough the experimentation or the resource reports on it, has the item 6. The items of the family 9 represent the types of links included in the learning object that can contribute legal confusion to the user.

The following table summarizes the catalogue of items that represent the legal certainty.

Table 1. Description of the items of the metrics

| Item number | Legal dimension            | Description                                      |
|-------------|----------------------------|--|
| 1           | Legal basic metadata       | Author and / or Institution to which it belongs. |
| 2           | Legal basic metadata       | Date of record / creation.                       |
| 3           | Legal basic metadata       | Date of record/creation                          |
| 4           | Legal basic metadata       | Contact information                              |
| 5           | Legal basic metadata       | Contact options                                  |
| 6           | Legal active applicability | Cost of use                                      |
| 7           | Legal active applicability | Not economic restrictions of utilization         |
| 8           | Legal active applicability | Functions allowed                                |
| 9.1         | Legal confusión            | Links in frames (framing)                        |
| 9.2         | Legal confusión            | Deep links (deep linking)                        |
| 9.3         | Legal confusión            | Incrusted links (inlining)                       |

### 3.3. Characterization of the intervals or segments

To obtain a numerical value that estimates the legal certainty in every resource, have been established five segments or intervals. In the following table details the level of legal compliance for the metrics.

Table 2. Intervals of the metrics

| Legal certainty | Numerical value |
|-----------------|-----------------|
| Very high       | 5               |
| High            | 4               |
| Medium          | 3               |
| Low             | 2               |
| Very low        | 1               |

The objects that present the first 8 items and do not present items from the family 9 will be catalogued as very high (value 5) in legal certainty. Those resources that in spite of possessing the first 8 items present at least an article of the family 9, will place in high levels (value 4). The measured objects with average legal certainty (value 3) will be those that have at least the items 3, 6, 7 and 8,

independently of that they have presence of items from the family 9. In the resources measured like low (value 2) we will not be able to satisfy some or all of the articles 3,6,7 and 8, and therefore we will not be able to assure a minimal legal fulfillment on the part of the user. Finally the objects in which it could not extract any of the first 8 items and in addition there exists presence of at least one item of legal confusion (family 9), they will be estimated with the lower possible level. (Value 1).

### 3.4. Application of the metrics

With the metrics described in the previous tables as basic point of reference, the following table shows the analysis of a learning object (obtained of the Elera repository) and his final valuation.

Table 3. Analysis of the “Deep See Odyssey” learning object

| Legal dimension            | Item number | Description   | Presence of item | Final Value |
|----------------------------|-------------|---|------------------|-------------|
| Legal basic metadata       | 1           | University of Delaware  | Y                | 4           |
|                            | 2           | October, 2001   | Y                |             |
|                            | 3           | Under copyright   | Y                |             |
|                            | 4           | It has more than one mean of contact  | Y                |             |
|                            | 5           | Email address, telephone number, fax number and online questions  | Y                |             |
| Legal active applicability | 6           | Sufficient Information to affirm that it does not have costs of utilization.  | Y                |             |
|                            | 7           | Sufficient Information to affirm that it does not have other restrictions.  | Y                |             |
|                            | 8           | Basic functions are allowed: experimentation, reproduction, nevegation... But also exist not allowed actions. Nevertheless it reports adequately of it. | Y*               |             |
| Legal confusión            | 9.1         | It presents links in frames   | Y                |             |
|                            | 9.2         | It does not present deep links  | N                |             |
|                            | 9.3         | It presents incrusted links but they are internal files, not from other webs.   | Y                |             |

*Note:* Y represents presence of the item, Y\* represents presence of the complex item, for example, the item 8 exists because the object contains information to guarantee that the principal functions are active, though also exist other secondary functions not allowed. N represents no presence of the item. The link of the resource is: <http://www.ceoe.udel.edu/extreme2001/home/index.html>

## 4. Materials and data sources

This section describes both sources of information used in this investigation, eLera and MERLOT, as well as the criteria used to obtain both samples.

### 4.1. ELERA repository

ELera, e-Learning Research and Assessment network, is a repository of great impact, which principal aim is to serve as base for the constant investigation in aspects of evaluation and quality of didactic



resources in Network. It belongs to the network of repositories eduSource from Canada and it was operative for the first time in 2002. One of the more interesting of eLera possibilities is that it allows to the users to value the resources by means of the LORI (Learning Objects Review Instrument), as to add comments over of the same ones. (Nesbit and Li, 2004).

The number of objects analyzed in the investigation obtained from eLera have reached 120, under the filter of select all those registered between 01-01-2005 and 31-12-2008, and that possess at least a review on the part of users.



Fig. 1. ELERA, search objects

#### 4.2. MERLOT repository

Multimedia Educational for Learning and Online Teaching (MERLOT), is one of the more popular and known repositories of free access which has established in Internet. It grants a high priority to the users, since his contributions have been very numerous and have helped to the standardization and diffusion of more advanced methods in cataloguing of digital resources (Lopez Gúzman, 2005).

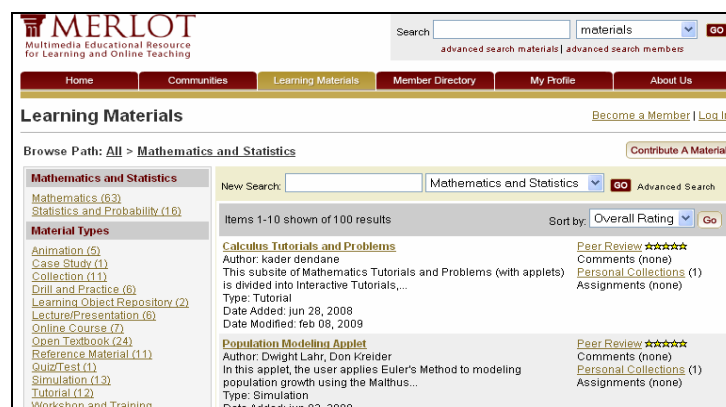


Fig. 2. Merlot resource search: Maths and statistics.

The utilization of MERLOT as source of information, as in eLera, has been made valid under the same criterion, obtaining a sample of 92 objects, which correspond to all those registered between 01-01-2005 and 31-12-2008, with at least a users' comment and review.

## 5. Results

The measurement of the legal certainty for the set of learning objects compiled in eLera and Merlot demonstrates an important emptiness in the legal information existing and available for consultation by the user. The following graph shows, in average values, the levels obtained in this measure, at the same time that are exposed the obtained ones by Sanz Rodríguez in reusability to verify how while the legal existing information does not reach of average the intermediate level of 3 (according to the metrics the necessary one in order that the user could do consciously a use of the resource without risk to expose himself to legal actions), the reusability is located in much major average levels.

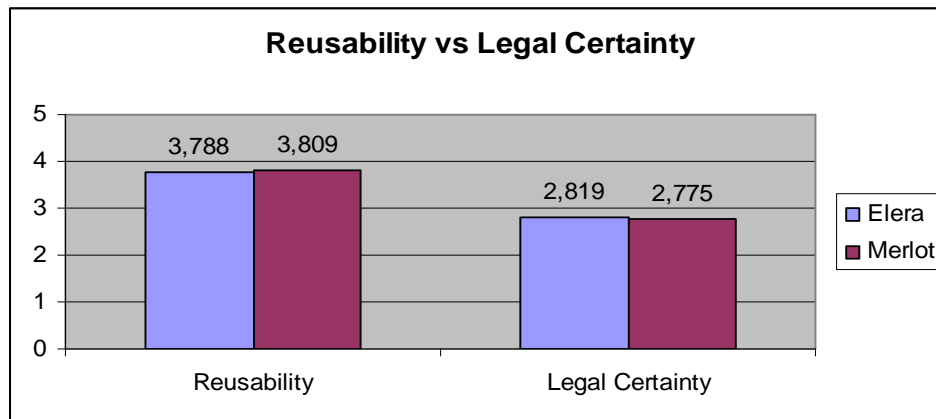


Fig. 3. Reusability vs Legal certainty

On the other hand, to verify if really there is influence between the reusability and the legal certainty, there have been obtained results applying linear correlation. This indicates us interesting results to see a light influence between the reusability and legal certainty, as in Merlot as in Elera.

## 6. Conclusions and outlook

In accordance with the results obtained, is evident the existence of an important emptiness in the legal existing information in the learning objects analyzed as in eLera as in Merlot. The above mentioned emptiness or deficit of legal information resides as in the metadata and the previous description of the resource that show the repositories, as especially in the own resource itself; where in many occasions is not contemplated even the totality of the legal basic items (author or institution, date of record, type of license, information and/or means of contact). This fact limits enormously the reached values and they prevent that the average value reaches an intermediate fulfillment.

As for the results that involve both variables (reusability and legal certainty), there has been demonstrated that the influence is very weak. Which indicates that in the learning objects analyzed with

origin in eLera and Merlot, the legal existing information in the same ones determines very weakly to his reusability.

The present study has been carried out over resources with origin in eLera and Melot, and although the sample is representative, is evident that it has been limited to the same set studied by Sanz Rodríguez to allow the correlation and compatibility with the parameter of the reusability. Evidently it is proposed to continue with future investigations and fieldworks about other important repositories to generalize over the deficit of legal information discovered. For it, there is recommended the use of the standard IEEELOM and to complement the legal metadata information in the resources, to be able to accede to her from the previous description of the same one. For example, through the application LOMPAD with the use of "rights" category.

The use of licenses, as copyright as copyleft, as well as others of type opened like are the Creative Commons, it is narrowly tied to the final level of legal certainty of any object. Therefore, it remains opened and it is proposed a future investigation that analyzes the existing correlation between the use of one or other one licenses and his final levels in reusability, to verify how affects the application of the licenses in the theoretical reuse and in the practical reutilization on the part of the user.

It is proposed, finally, as more ambitious proposal, the automation of the metrics designed and experienced on this investigation, with the last end of being able to be used in the search engines of the repositories and facilitating to the user the selection of resources that are legally related to his preferences.

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